

a gear 130 on the shaft of motor 128 and a gear 132 on shaft 124 of drum 120, so as to move display member 110 relative to print station 112 (which is located in proximity to drum 120) and relative to erase roller 116 (which is located in proximity to drum 118). The arrangement of the print modules 114 within print station 112 and the construction of each print module are substantially identical to the arrangement and construction of print modules 14 in carriage 12 previously described. As display member 110 passes print station 112, the print modules 114 are selectively actuated to print the information to be displayed on display surface 110A. After all of the information has been printed and display member 110 has been moved to a position where the printed information is displayed, display member 110 is stopped by deenergization of motor 128. When new information is to be displayed, motor 128 and a motor 134 coupled with erase roller 116 are energized, whereupon the "old image" on display surface 110A is erased by erase roller 116 as display member 110 is drawn around drum 118. Simultaneously with this erasing operation, electrical signals are provided to the print modules 114 so that a "new image" to be displayed is imprinted. Although not illustrated, provision is also made for re-inking each of the print modules.

It will be appreciated that the billboard-type sign of the present invention has significant advantages over similar signs previously known and used.

The energy consumed by the sign of the present invention is limited to that consumed by the momentarily-actuated solenoids of the print modules and that consumed by the drive and erase roller motors. The sign of the present invention is constructed from readily-available, standard mechanical and electromechanical components and is therefore relatively inexpensive to manufacture. The sign of the present invention also requires relatively little maintenance, with such maintenance being principally limited to replacement at substantial intervals of the print module pads and the erase roller and to periodic replenishment of the ink reservoir. The light reflectance of the dye in the dry erase ink and the light reflectance of the display surface can be chosen to provide maximum contrast under adverse ambient lighting conditions, and the resolution of the information displayed can be flexibly adjusted to meet the requirements of a particular application by appropriately choosing the size of the print module pads, the relative vertical spacing of the print modules, and the timing of the electrical signals applied to the solenoids of the print modules upon relative motion between the display surface and the print modules.

While the invention has been described with respect to several embodiments, it is to be clearly understood by those skilled in the art that the invention is not limited thereto. As an example, the print modules may be horizontally staggered to meet the requirements of a particular application rather than being vertically aligned as previously described. As another example, bidirectional printing and displaying may be afforded to the sign illustrated in FIGS. 1-6 by mounting an erase roller on either side of carriage 12 and by providing an actuating means for each erase roller so that only one of the erase rollers is in contact with the display surface for a given direction of movement of the carriage relative to the display surface. As yet another example, the dispensing valves in re-inking station 18 in FIGS. 1 and 2 may be replaced by a plurality of solenoid-operated metering valves mounted on carriage 12, with each metering

valve being associated with one of the print modules and being adapted to supply ink from a reservoir on carriage 12 to the pad of its associated print module when re-inking is desired. As still another example, maintenance of the erase roller may be reduced by replacing the erase roller with a supply drum, a take-up drum, and a sheet of absorbent fabric or webbing that is unspooled from the supply drum and spooled onto the take-up drum. In such an arrangement, the material or webbing on the take-up drum is maintained in contact with the display surface and the wiping action necessary to remove an image thereon is provided by rapidly moving the take-up drum in a vertical direction. Therefore, the scope of the invention is to be interpreted only in conjunction with the appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A variable information sign comprising:

a display member having a smooth and substantially nonporous display surface;

a plurality of print modules disposed in proximity to said display member and facing said display surface, each said print module including a pad of porous material containing a dry erase ink and being selectively-actuable to bring said pad into contact with said display surface so as to print an image in the form of a matrix of discrete areas of ink thereon;

erase means disposed in proximity to said display member and facing said display surface for wiping said display surface to remove any image thereon; and,

means for producing relative motion between said display member and said plurality of print modules and between said display member and said erase means, said plurality of print modules and said erase means being arranged so that upon said relative motion, any previously-printed images are first removed from said display surface by said erase means and an image of information desired to be displayed is thereafter formed on said display surface as said plurality of print modules are selectively actuated.

2. A sign as recited in claim 1, wherein said display member is stationary and wherein said means for producing relative motion is operative to move said plurality of print modules and said erase means relative to said display member.

3. A sign as recited in claim 2, wherein said display surface is substantially planar.

4. A sign as recited in claim 2, wherein said display member comprises a porcelain-coated board.

5. A sign as recited in claim 2, wherein said means for providing relative motion includes a carriage supported for translative motion relative to said display, and wherein said plurality of said print modules are mounted on and movable with said carriage.

6. A sign as recited in claim 5, wherein said plurality of said print modules are spaced on said carriage in a direction transverse to said translative motion of said carriage.

7. A sign as recited in claim 6, wherein said plurality of print modules are substantially aligned on said carriage in a direction transverse to said translative motion of said carriage.

8. A sign as recited in claim 7, wherein said carriage includes a shaft extending transversely to said transla-